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**ABSTRACT OF THE DISCLOSURE**

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The invention concerns a process for producing transgenic plant cells, which comprises: contacting a culture of plant cells with an inhibitor of poly-(ADP-ribose) polymerase, prior to transformation, for a period of time sufficient to reduce the response of the cultured cells to stress and to reduce their metabolism. The untransformed cells are then contacted with foreign DNA comprising at least one gene of interest under conditions in which the foreign DNA is taken up by the untransformed cells and the gene of interest is stably integrated in the nuclear genome of the untransformed cells to produce the transgenic cells. The transgenic plant cells are recovered from the culture. The invention further concerns a process for increasing the frequency of obtaining transgenic plant cells, via Agrobacterium-mediated transformation, which comprises: contacting a culture of plant cells with an inhibitor or poly(ADP-ribose) polymerase prior to transformation for a period of approximately 1 to 2 days or culturing transgenic plant cells after transformation in a medium containing an inhibitor of poly(ADP-ribose)polymerase for a period of time of approximately 1 to 14 days.

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